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Original Research Article

Comparitive study of therapeutic effects of labetalol with methyldopa in hypertension in pregnancy induced hypertension and fetal outcome

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ABSTRACT

Background: In a country like India, where maternal mortality rate is still very high despite progress and development which has consistently been made in the health services, a big proportion is still deprived of it. Hypertension is the most common medical problem encountered during pregnancy.
Aims: This study was undertaken to compare the efficacy of labetalol versus methyldopa in the treatment of pre-eclampsia and prevention of further complications.
Materials and Methods: The present study had been carried out on antenatal booked 110 cases between 20 – 40 years of age who developed hypertension after 20 weeks period of gestation with or without oedema & proteinuria or both, attending antenatal OPD or Emergency at Govt General Hospital, Nizamabad, from 1st December 2017 to 31st may 2018.
Results: Incidence of PIH in the present study is 7.23% in the booked population. Side effects of drugs were reported more in methyldopa group as compared to labetalol. Adverse foetal outcomes, especially IUGR and pre term babies are more in methyldopa group as compared to labetalol group. Emergency lscs cases are 14 out of 55 in labetalol group,22 out of 55 in methyldopa group were noted. Most common indication for emergency LSCS in both the groups was uncontrolled hypertension, but cases are more in methyldopa group. in Labetalol group 7 out of 55 underwent EL LSCS, in methyldopa group 6 out of 55 underwent LSCS. Total no of caesarean sections in labetalol group are 21 out of 55(32.7%),whereas in methyldopa group28 out of 55 (50.9%), so operative interference is more in methyldopa group when compared to labetalol group.
Conclusions: It concludes that labetalol is suitable for use during pregnancy to reduce maternal and fetal side-effects, so it has efficient hypotensive action.

1. Introduction

Hypertensive disorders complicating pregnancy are common and form one of the deadly triad, along with haemorrhage and infection that results in a large number of maternal deaths. Hypertensive disorders of pregnancy affect 8% of the pregnancies. Gestational hypertension is followed by signs and symptoms of pre-eclampsia almost half the time, and pre-eclampsia is identified in 4-5% of all pregnancies.[1] It has been estimated that worldwide approximately 50,000 women die each year from eclampsia. Pre-eclampsia is a disorder peculiar to human pregnancy. It complicates 5 – 10% of all pregnancies and accounts for a considerable proportion of both maternal and perinatal deaths. Several classifications of hypertension in pregnancy have been used in the past, which only two have received the widest acceptance, that of ACOG and that of ISSHP. The World Health Organization (WHO) systematically

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reviews maternal mortality worldwide, and in developed countries, 16 percent of maternal deaths were attributed to hypertensive disorders.[1]

Hypertension in pregnancy is defined as systolic blood pressure (SBP) ≥ 140mmHg and/or diastolic blood pressure (DBP) ≥ 90 mmHg, or by increase in SBP ≥ 30mmHg, or in DBP ≥ 15 mmHg, from preconception or first trimester blood pressure confirmed by two measuring, 6 hours apart had also been used as diagnostic criteria, even when absolute values are <140/90mmhg5. Hypertension in pregnancy is the second leading cause of maternal death, accounting for 20% of maternal deaths 6 and presents an increased risk of complications for the fetus, including increased NICU involvement, preterm delivery and low birth weight 7 and even foetal death 8. In addition to the risk they present to the pregnancy, hypertensive disorders of pregnancy have been linked to future high blood pressure and cardiovascular disease in women.

A wide spectrum of anti-hypertensive agents represents the key of successful pregnancy hypertension treatment and opportunity of choice, in accordance with indications and availability of drugs provided by drug tendering. Methyldopa was most commonly used for treatment of hypertension during pregnancy based on its effectiveness and safety for both mother and fetus as an anti- hypertensive drug , but it takes longer time to act and also less efficacious as hypertensive drug. It is still the most commonly used drug for long term control of blood pressure in pregnancy. This has been shown to improve the foetal outcome compared to placebo. Long term follow up data of 7 years shows no detrimental effects to the off springs in the Methyldopa treated group. At high doses the sedative and depressant effects of methyldopa are marked. Methyldopa should not be used if there is a substantial risk of maternal depression in such cases a beta-blocking agent or calcium antagonist may be more suitable.

Labetalol gives better control of blood pressure compared to other anti- hypertensive agents.[2] It is a combined alpha and beta adrenergic antagonist and has become the most frequently used anti-hypertensive for acute severe hypertension. Advantage of labetalol is that, it is available as both Injectable and oral and time of onset of action is earlier than methyldopa.This study was undertaken to compare the efficacy of labetalol versus methyldopa in the treatment of pre-eclampsia and prevention of further complications.

2. Materials and Methods

This is a hospital based comparative study was carried out in the department of Obstetrics & Gynaecology at Govt. General Hospital, Nizamabad from December 2017-2018. Total 110 antenatal Booked cases between 20-40 years of age, who developed hypertension after 20 weeks period of gestation with or without oedema & proteinuria or both attending the antenatal out-patient department & also those cases admitted in the GGH, Nizamabad as emergency were taken for this comparative study. 55 cases were treated with labetalol hydro- chloride, 55 cases were treated with Methyldopa. The cases were studied alternatively in a random manner.

Detailed of each case was taken down in prepared Proforma for the study and the data's were tabulated & analysed to note for any significant finding.

2.1. Inclusion criteria

Cases of PIH between 20 to 40 years of age.

2.2. Exclusion criteria

Chronic hypertension pre-dating pregnancy, Chronic hypertension with superimposed PIH and Latent or transient hypertension PIH with complications.

The sample size was calculated based on the previous studies, and after discussion with a Biostatistician, using the formula as below

Mean in Group 1 $\mu 1$.
Standard Deviation in group 1 $\sigma 1$.
Mean in Group 2 $\mu 2$
Standard Deviation in Group 2 $\sigma 2$.
Ratio (group2/group1) = 1.
Alpha error of 1% (constant value is 2.58).
Confidence limits are 99%.
Beta error is 1% (constant value is 2.33).
Power of study is 99%.

2.2.1. In this study the cases were grouped on the basis of DBP

Group I: (DBP =<110) this group comprised of cases with diastolic blood pressure between 100-109 mm. of hg. Group II: (DBD > 110 mm of Hg) Patients with diastolic blood pressure at or above 110 mm of Hg.

Compare two means (use mean and standard deviation

$$n \geq \frac{\left(Z_{1-\alpha/2}+Z_{1-\beta}\right)^2\left(\sigma_1^2+\frac{\sigma_2^2}{r}\right)}{\left(\mu_1-\mu_2\right)^2}$$

The study consisted of thorough history & clinical examination of the patients & certain investigations. Detail history of age, parity, socio-economic status, education occupation etc. were taken. Special emphasis was given in the porous women for any incidence of hypertension or convulsion in previous pregnancy & also the out- come of previous pregnancy.

Blood pressure was the main criteria apart from other parameters. It was re- corded with the same instrument each time. The patient has to lie on a bed with a 15°- 30° tilt to the right & then the sphygmomanometer cuff was applied, first the brachial artery was palpated in the cubital fossa, then the rubber tubing attached to the rubber bag of the cuff was placed over the brachial artery & cuff rolled over the upper

arm 1" above the elbow joint. The point of disappearance of sounds (Korotkoff's Sound –V) was taken as the diastolic blood pressure. Blood Pressure was taken at least twice on first detection in out- patient department in sitting posture & if admitted then again after 4 hours.

The study cases were examined thoroughly under resting conditions, either in the O.P.D or on admission in the hospital, & also the study cases who were under domiciliary treatment, were asked to come for weekly review.

Routine investigations were done. When Diastolic Blood Pressure was100 109 mm.Hg. Or above with proteinuria. When there was an increase of weight of more than 2 kgs. Over one month or more than 0.5 kgs-0.75 kgs. over one week, or marked oedema. When the patient complained of disturbed sleep, scanty urination, less foetal movement etc. with a raised blood pressure. If there was I.U.G.R or any complication were suspected. On admission the patient were monitored clinically, examining certain parameters daily & some on a weekly basis.

2.3. Daily monitoring

1. Blood Pressure was recorded at least four times daily
2. Urinary protein was checked once daily.
3. Oedema whether present – if so whether increasing or decreasing.
4. Urinary output.
5. Enquiry into complaints like blurred vision, headache, epigastric pain, loss of foetal movement, pain abdomen or any vaginal bleeding. etc.
6. P/A examination for height of uterine fundus, symphysio-fundal height girth of abdomen at the level of umbilicus after 30 weeks of gestation, amount of liquor-amni, approximate foetal size, lie, presentation, character of the foetal heart sound.

The weight gain was noted twice weekly. An USG was repeated at least 3 times in cases, who were admitted in the hospital as study cases. One before 20 weeks, between 28-32 weeks & after 36 weeks, Colour Doppler study and modified bio physical profile was also done to rule out IUGR.

Among 110 cases, 55 patients were treated with labetalol hydrochloride, 55 patients were treated with methyldopa as an antihypertensive therapy, along with this some advised like adequate, bed rest & at least 8 hours of bed rest in left lateral position, adequate sleeping hours.

In cases of Postural hypotension, headache, dyspnoea, drowsiness, nasal congestion, liver damage etc.

The drug was avoided in patient with sign of bradycardia, bronchial asthma, heart failure & heart block. Start with 100 – 200 mg TDS increases to 1200/mg day in 24 hours in divided doses orally. (tablets) In hypertensive emergencies I.V. 0.25 mg/kg over 2 -3 minutes; repeat after every 10 – 15 minutes 0.5 mg/kg till baseline. Diastolic blood pressure achieved & maximum 220 mg can be injected to achieved baseline diastolic pressure.

At follow up, together with usual general & local examinations, special attention were given to the abdominal scar in caesarean section and a per vaginal examination was done in each cases to note for sign of involution & to see, any abnormal vaginal discharge. Blood Pressure was recorded in each cases, & also urine was tested for protein & oedema was also looked for to note, any residual effect of hypertension. Patients were advised for adequate breast feeding, method of contraception usually by barrier method or progesterone only pill & for future pregnancy spacing. If Blood pressure was found to be high, patients were referred to cardiology dept. to exclude any systemic cause of the hypertension & for mild proteinuric cases, exclusion of infection

3. Results

Incidence of PIH in the present study is 7.23% in the booked population.

Around 31% of cases in labetalol group had uncontrolled DBP at first visit as compared to 23.6% cases in methyldopa group. But this difference was not found to be statistically significant on Chi square test (P >0.05). Only 12.7% of cases in labetalol group had uncontrolled DBP after treatment as compared to 18.2% cases in methyldopa group. This shows there is better improvement in labetalol group as compared to methyldopa group for controlling DBP after treatment. But this difference was not found to be statistically significant on Chi square test (P >0.05).

Around 82% of cases in labetalol group had proteinuria before treatment as compared to 76.4% cases in methyldopa group. But this difference was not found to be statistically significant on Chi square test (P >0.05).

After treatment only 9% cases in labetalol group had persistent proteinuria as compared to 18.2% cases in methyldopa group. This shows there is better control of proteinuria after treatment with labetalol. But this difference was not found to be statistically significant on Chi square test (P >0.05).

In labetalol group persistent proteinuria cases are less and better fetal outcome after treatment when compared to Methyldopa group. Adverse foetal outcomes are observed more in uncontrolled DBP cases as compared to controlled DBP cases in both labetalol and methyldopa groups.

Only 16.4% cases in labetalol group had pre term delivery as compared to 32.7% cases in methyldopa group. This difference in distribution was found to be statistically significant on chi square test (P <0.05).

Most common mode of delivery in labetalol group is normal delivery with episiotomy (79%), when compared to methyl dopa (72%). Whereas in labetalol group emergency lscs were (25.5%) and in methyldopa group (40%).Table 4

Table 1: Distribution of DBP at first visit

			Drug		Total
			Labetalol	Methyldop A	
DBP at first visit	>110	Count	17	13	30
		%	30.9%	23.6%	27.3%
	90-110	Count	38	42	80
		%	69.1%	76.4%	72.7%
Total		Count	55	55	110
		%	100.0%	100.0%	100.0%
CHI Square = 0.733, DF = 1, P Value = 0.392 (NS)					
DBP Post treatment	<110	Count	48	45	93
		%	87.3%	81.8%	84.5%
	>110	Count	7	10	17
		%	12.7%	18.2%	15.5%
Total		Count	55	55	110
		%	100.0%	100.0%	100.0%

CHI square = 0.626, DF = 1, P Value = 0.429 (NS)

Table 2: Distribution of pre treatment proteinuria

Pre-treatment proteinuria			D rug		Total
			Labetalol	Methyldop A	
Pre-treatment proteinuria	-	Count	10	13	23
		%	18.2%	23.6%	20.9%
	+	Count	45	42	87
		%	81.8%	76.4%	79.1%
Total		Count	55	55	110
		%	100.0%	100.0%	100.0%
Post treatment proteinuria	-	Count	50	45	95
		%	90.9%	81.8%	86.4%
	+	Count	5	10	15
		%	9.1%	18.2%	13.6%
Total		Count	55	55	110
		%	100.0%	100.0%	100.0%

Around 63% cases in labetalol group had no maternal complications during and after delivery as compared to 45.4% in methyldopa group. However the difference in distribution was not found to be statistically not significant on chi square test (P >0.05). In both the groups the most common complication observed in abnormal Blood Pressure levels.Table 5

Babies born with Low birth weight had more adverse foetal outcomes as com- pared to normal birth weight babies in both the groups of drugs.Table 6

Side effects of drugs were reported more in methyldopa group as compared to Labetalol group and this difference was found to be statistically significant on chi square test (P <0.05).Table 7

Emergency lscs cases are 14 out of 55 in labetalol group, 22 out of 55 in methyldopa group were noted. Most common indication for emergency LSCS in both the groups was uncontrolled hypertension, but more in methyldopa group. In Labetalol group 7 out of 55 underwent LSCS (3-BOH,1-breech,1 CPD,1 elderly primy, 1 less foetal movements), in methyldopa group 6 out of 55 underwent LSCS (2-BOH,2-elderly primy,2 IUGR).

4. Discussion

The present study comprises the comparison of therapeutic effects of labetalol with methyldopa in control of hypertension in P.I.H. & to reduce the maternal & foetal complications in cases of PIH & ultimately to improve the maternal & foetal morbidity & mortality. All the booked cases have been booked before 20th weeks of pregnancy |& were normotensive. They have become hypertensives subsequently along with or without oedema & proteinuria or both.

Present study shows the incidence of pregnancy induced hypertension was 7.23% out of 1520 cases & it is comparable to the incidence found by James PR (2004)[3] as 6.8%& pre-eclampsia is identified in 4-5% of all pregnancies.Study shows that around 31%of cases in labetalol group had uncontrolled DBP at first visit as compared to 23.6% cases in methyl dopa group. There is general agreement that severe hypertension (i.e. DBP > 110

Table 3: Foetal outcome in post treatment proteinuria

Drug			Foetal outcome					Total
			-	Asphyxia	End	Iugr	Pre term baby	
Labetalol	Proteinuria	-	46	1	1	1	1	50
		+	2	0	0	1	2	5
		Total	48	1	1	2	3	55
Methyl- dopa	Proteinuria	-	35	1	0	5	4	45
		+	2	1	1	2	4	10
		Total	37	2	1	7	8	55
Total	Proteinuria	-	81	2	1	6	5	95
		+	4	1	1	3	6	15
		Total	85	3	2	9	11	110
Labetalol	DBP	<110	47	1	0	0	0	48
		>110	1	0	1	2	3	7
	Total	48	1	1	2	3	55	
Post treatment foetal out-come and DBP								
Methyl- Dop A	DBP	<110	37	1	0	3	4	45
		>110	0	1	1	4	4	10
	Total	37	2	1	7	8	55	
Total	DBP	<110	84	2	0	3	4	93
		>110	1	1	2	6	7	17
	Total	85	3	2	9	11	110	

Table 4: Gestational age and mode of delivery

			Drug		Total
			Labetalol	Methyldop A	
A AT DE- Livery (Weeks)	<37	Count	9	18	27
		%	16.4%	32.7%	24.5%
	>37	Count	46	37	83
		%	83.6%	67.3%	75.5%
Total		Count	55	55	110
		%	100.0%	100.0%	100.0%
Mode	EL LSCS	Count	7	6	13
		%	12.7%	10.9%	11.8%
	EM LSCS	Count	14	22	36
		%	25.5%	40.0%	32.7%
	Forceps	Count	4	2	6
		%	7.3%	3.6%	5.5%
	ND	Count	11	11	22
		%	20.0%	20.0%	20.0%
	ND with EPI	Count	18	14	32
		%	32.7%	25.5%	29.1%
	Ventouse	Count	1	0	1
		%	1.8%	0.0%	0.9%

Table 5: Maternal complications during and after delivery

			Drug		Total
			Labetalol	Methyl dop A	
Complications	Nil	Count	35	25	60
		%	63.6%	45.4%	54.5%
	Fall IN BP	Count	2	6	8
		%	3.63%	10.9%	7.27%
	Uncontroled BP	Count	7	10	17
		%	12.7%	18.18%	15.4%
	Breast En- Gorgement	Count	2	4	6
		%	3.63%	7.27%	5.45%
	PPH	Count	2	0	2
		%	3.63%		1.81%
	Retention of urine	Count	3	4	7
		%	5.45%	7.27%	6.36%
	Raised temperature	Count	3	3	6
		%	5.45%	5.45%	5.45%
	Wound infection	Count	1	3	4
		%	1.8%	5.45%	3.63%
Total		Count	55	55	110
		%	100%	100%	100%

Table 6: Birth weight of baby and foetal outcome

Drug			Foetal outcome					Total
			-	As phyxia	End	Iugr	Pre term baby	
L Abetalol	Birth Weight	<2.5	11	1	0	2	0	14
		>2.5	37	0	1	0	3	41
	Total		48	1	1	2	3	55
Methyldopa	Birth weight	<2.5	5	0	1	7	5	18
		>2.5	32	2	0	0	3	37
	Total		37	2	1	7	8	55
Total	Birth weight	<2.5	16	1	1	9	5	32
		>2.5	69	2	1	0	6	78
	Total		85	3	2	9	11	110

mm Hg should be treated to protect the pregnant women from the risk of intracerebral haemorrhage. However, there is, less agreement about drug treatment in milder hypertension. The Canadian 3 & US 4 consensus groups advocate very conservative use of anti-hypertensives & they recommended only if DBP is sustained above 105 or 110 mm Hg & a lower threshold 90 mm Hg, if hypertension has arisen before 28 weeks' gestation. The Cochrane review on Anti-hypertensive drug therapy for mild to moderate hypertension during pregnancy included trials comparing different antihypertensive regimens. [5]Except for fewer episodes of severe hypertension, none of the studies showed any benefits from antihypertensive treatment (Magee, 2015).[4]

Study shows that only 12.7% of cases in labetalol group had uncontrolled DBP after treatment as compared to 18.2% cases in methyldopa group. This shows there is better improvement in labetalol group as compared to methyldopa group for controlling DBP after treatment. So the present study correlating with el-Qarmalawi AM et al[5]And Molvi SN at al (2012)[6]from Jammu and Kashmir. When the goal of treating hypertension is to reduce maternal risk, the agents selected must be efficacious & safe for the foetus. SBP =/> 160 or DBP = > 110 mm Hg in a pregnant woman should be considered an emergency, & hospitalization is absolutely essential. Pharmacological treatment with i.v. Labetalol or oral methyldopa is to be initiated. A recent Cochrane review on the value of antihypertensive treatment in mild hypertension showed that the risk of severe hypertension associated with the use of antihypertensive drugs compared to placebos or no antihypertensive drugs was halved (RR 0.5; 95% CI 0.51 to 0.62) with no significant effect on the risk of pre- eclampsia (RR0.99, 95% CI 0.84 to 1.18). Moreover, there was no significant effect on the risk of perinatal death, preterm birth, or small for gestational age babies, & no clear differences in other outcomes. It hence remains unclear if women with mild hypertension in pregnancy should be treated. Moreover, lowering Bp in women with mild hypertension could increase the risk of a small for gestational age baby.

Table 7: Side effects

			Drug		Total
			Labetalol	Methyldop A	
Side effects	Nil	Count	50	32	82
		%	90.9%	58.18%	74.5%
	Drowsiness	Count	1	0	1
		%	1.8%	0.0%	0.9%
	Dryness of mouth	Count	0	1	1
		%	0.0%	1.8%	0.9%
	Dyspnoea	Count	2	0	2
		%	3.6%	0.0%	1.8%
	Headache	Count	0	3	3
		%	0.0%	5.5%	2.7%
	Hypotension	Count	2	6	8
		%	0.0%	5.5%	7.27%
	Nasal stiff- ness	Count	0	4	4
		%	0.0%	7.3%	3.6%
	Palpitation	Count	0	5	5
		%	0.0%	9.1%	4.5%
	PH	Count	0	4	4
		%	0.0%	7.3%	3.6%
Total		Count	55	55	110
		%	100.0%	100.0%	100.0%

Except for fewer episodes of severe hypertension, none of these studies showed any benefits from antihypertensive treatment (Magee)[4] Similar conclusions were reached by Abalos and associates.[7]

Present study shows the present study, in the labetalol group 48 (87.3%) cases responded well with labetalol therapy & foetal outcome was better in comparison with methyldopa treated group 45(81%) of cases were responded well as concern to DBP only so correlating with studies of EL Qarmalaui et al[5], Plouin et al.[8] and Lamming et al.[9] When compared with labetalol group after treatment with methyl dopa occurrence of IUGR & preterm baby was much less. In this study 7out of 55, 10 out of 55 cases were showed prognostically bad foetal outcome. Adverse foetal out comes are observed more in uncontrolled DBP cases when compared to controlled DBP cases in both labetalol and methyldopa groups i.e 7 out of 55,10 out of 55 respectively.in methyl dopa group correlating with Molvi SN[10] study from Jammu &Kashmir stated that compared to control group the treatment group had lower incidence of foetal complications Sibai et al.[11] In his comparative study between methyldopa & labetalol showed no difference in foetal outcomes.

It is an important diagnostic as well as prognostic factor of PIH, with around 82% of cases in labetalol group had proteinuria before treatment as compared to 76.4% cases in methyldopa group.as significant proteinuria on the basis of Dipsticks test. Proteinuria develops as the disease progresses & usually occurs after the development of hypertension & weight gain.

Study shows that Around 82% of cases in labetalol group had proteinuria before treatment as compared to 76.4% cases in methyldopa group. 76.4% cases in methyldopa group After treatment only 9% cases in labetalol group had persistent proteinuria as compared to 18.2% cases in methyldopa group. This shows there is better control of proteinuria after treatment with labetalol.

Study shows the only maternal complication was Imminent Eclampsia, though it was 4(7.3%) cases in labetalol group, whereas it was 14 (25.5%) in methyldopa group . So the 'P' value of labetalol vs methyldopa was 0.01 (by CHI – SQUARE test).

The eclamptic fit may be preceded by some premonitory symptoms & signs, if diagnosed at this stage is designated imminent eclampsia. Though the mode of delivery is determined by variable factors, the ability of the foetus to withstand labour & the chances of successful induction of labour at early gestational age, here all the cases who developed imminent eclampsia, delivered by EMLSCS.. Seebe et al[12] also have shown no difference in maternal & foetal effects with the study of Nifedipine vs Hydralazine but here, 3 preterm baby & 2 cases of IUGR was documented in labetalol treated group, whereas in methyldopa group asphyxia neonatorum was 2, preterm baby=8, IUGR=7 & END was also one. So, in brief–to compare with methyl dopa, labetalol causing less maternal complications & also provide better foetal outcome correlating with El Qarmalawi AM et al, Mahmoud Alalfy et al.[5,13]

Delivery is the cure for Pre-eclampsia, The prime objectives are to forestall convulsions, to prevent

intracranial haemorrhage, and serious damage to other vital organs, and to deliver a healthy infant. Assessment of foetal well-being and placental function have been attempted, especially when there is hesitations to deliver the foetus because of pre-maturity. Disease progression follows on predictable pattern; there- fore, value of extending the ante partum period beyond 37 weeks is questionable. The risk-benefit ratio favour expectant management until 37 weeks' gestation.

To compare with labetalol and methyldopa, maximum no (83.6%) of Cases were delivered at or beyond 37 weeks. So in prolongation of pregnancy labetalol will come first among these two anti-hypertensive drugs used in this study. Here 'P' value of labetalol vs methyldopa <0.05, which is significant which is correlating with El Qarmalawi AM et al, Mahmoud Alalfy et al.[5,13]

Sibai et al[12] showed among 186 patients, delivery at 35 weeks of GA in the study with labetalol vs drugs, more foetal growth retardation in labetalol group. Moreover Pickles et al[14] Stated that in the Study of 144 women with labetalol vs placebo delivery at less than 37 weeks, there was marked preterm babies in labetalol group, but here out of 55 patients only 3 patients delivered preterm babies. This study is not correlating with sibai et al,[11] it was recorded and 2 cases of asphyxia 8 cases of preterm babies, 7 cases of IUGR and 1 case of early neonatal death was recorded in the methyldopa group. So after analysing this table it can be predicted that labetalol can prolong pregnancy and provide better foetal outcome.

In retrospective studies comparing induction of labour with caesarean delivery in women with severe pre-eclampsia remote from term induction was a reasonable alternative.Indicates that majority of patients were delivered vaginally, and it was prominent in labetalol group (79%) in comparison to methyldopa group. To com- pare with methyldopa, in the labetalol group maximum no (44%) cases showed spontaneous onset of labour, it has been previously reported that labetalol may contribute to the initiation of labour pain possibly by a direct effect on the cervix, labetalol may also help to ripen the uterine cervix and hence increases the rate of vaginal delivery.AM EI-Quarmalawi et al[5] reported that 27 out of 54 in labetalol group and 12 out of 50 cases in the methyldopa group underwent spontaneous onset of labour which is correlating with this study shows 24 out of 55 in the labetalol group, 18 out of 55 methyldopa group underwent spontaneous onset of labour.

Alexander and colleagues,[15] reviewed 278 single tone live born infants weighing 750 to 1500 gms, delivered of women with severe pre-eclampsia at Park- land Hospital. Half of the woman had labour induced and the remainder were delivered by caesarean section without labour. Induction of labour was not successful in 35% of the woman in the induced group, but was not harmful to their very LBW infants. shows that present study, to compare with methyldopa, in the labetalol group there were minimum no. of cases 14(25.5%) underwent Emergency lscs due to un-controlled hypertension.

In Labetalol group 7 out of 55 underwent ELLSCS (3- BOH,1-breech,1 CPD,1-elderly primy,1 less foetal movements), in methyl dopa group 6 out of 55 underwent LSCS (2-BOH, 2-elderly primy, 2 IUGR). The present study For El lscs foetal indications were 28.5% in labetalol group whereas it was 33.3% in methyldopa and there was no El lscs due to IUGR in the labetalol group, whereas 33.3% cases under went El lscs due to IUGR in the methyl- dopa groups. So in this study, majority of the labetalol treated patient were delivered by vaginally rather than caesarean section El Qarmalawi AM et al,[5] Mah- moud Alalfy et al.[13] In this study total number of caesarean sections are less in labetalol group when compare to methyldopa group.

present study there were no anaesthetic hazards, In labetalol group around 63% cases had no maternal complications during and after delivery when compared to 45.4% in methyldopa group. Uncontrolled BP noted in labetalol group are 12.7%,whereas in methyldopa group 18.18%, Breast engorgement in labetalol group 3.6%, in methyldopa group 7.27%, PPH in labetalol group 3.6%, in methyldopa group no cases reported Retention of urine – 5.45% in labetalol group whereas in 7.27% in methyldopa. Fever (raised temperature) in both groups 5.5%, equally distributed Wound infection rates are -1% in labetalol group, whereas in methyldopa group 5.45% as the no caesarean section are more. Mahmoud Alalfy et al.[13]

Study shows that infants less than 2.5kg birth represent about 26% of all live births in India. More than half of these are born at term. In most parts of India, the mean birth weight is between 2.7 kg and 2.9 kg. To compare with methyldopa 18(32.7%), in the labetalol group out of 55 only 14(25.5%) cases were recorded birth weight less than 2.5 kg .On the basis of LBW in the labetalol group the mean + SD was 2.3 + 0.11, and in the methyldopa group, 2.2 + 0.17. So the mean birth weight among LBW babies were also increased in the labetalol group. In India among LBW babies majority of cases could be attributed to IUGR. In this study the majority of the LBW babies were due either to pre-maturity or IUGR. As because there were maximum no. of preterm and IUGR babies were documented in the methyldopa group, the no. of LBW babies were also maximum in the methyldopa group in comparison with labetalol. There was 1 out of 55cases early neonatal death amongst LBW babies in the labetalol group, whereas 1 out of 55 cases of early neonatal death were documented in the methyldopa group.

Babies of weighing ≥2.5 kg. With also had better foetal outcome in labetalol group in comparison with methyldopa group. So labetalol therapy can reduced the no of LBW babies and can serve a better foetal outcome, which is

correlating with El Qarmalawi AM et al, Mahmoud Alalfy et al.[5,13]

Due to high rate of caesarean section (38.2% in labetalol group, 50.9% in methyldopa groups) especially in methyldopa group, comparing with labetalol group, there will be some increased morbidity to the mother but there were only minor com- plications like retention of urine, breast engorgement, wound infection, increased temperature, which were present in the majority of the cases in methyldopa group & the all were symptoms free on discharge from hospital, though staying in hospital was delayed by a few days.

Present study 52(94.5%) cases of labetalol, 35(63.6%) cases were not associated with complications, 1(1.8%) had drowsiness, 2(3.6%) had dyspnoea, 2(3.63%), cases had hypotension in labetalol group whereas in methyl dopa group 32(58.18%) were not associated with complications, 1(1.8%) cases had dryness of mouth, 3(5.5%)cases had head ache, 6(10.9) cases had hypotension, 4(7.3%)cases had nasal stuffiness, 5(9.1%)cases had palpitation, 4(7.3%) cases had postural hypotension, So in this study it has been observed that there were less no. of LSCS and reduced maternal and foetal morbidity and mortality in the labetalol group in comparison with methyldopa groups.

A. M. El -Quarmalawi et al[5] showed in a comparative study of labetalol & methyldopa there were 3 cases out of 54 in labetalol group complained dyspnoea but in this present study only 2 patients out of 55 were complained dyspnoea, moreover, in the methyldopa group out of 55 patients, no cases were complained drowsiness, 3 were of headache, 4 complained nasal congestion & 3 cases presented with postural hypotension in their study but this present study, in the methyldopa group 1 patient complained headache & 4 patients were presented with postural hypotension.

All the 110 cases were also to come for follow up after 2 weeks or after 6 weeks interval and they were followed up for changes in blood pressure, proteinuria, for oedema & other parameters as routinely checked in puerperium. In the labetalol group out of 55 patients only 7(12.6%) patients had persistence of hypertension, 10(18.2%) cases in methyldopa group. The persistent hypertensive cases were referred to cardiology OPD & in proteinuric cases, it was tried to rule out renal dysfunction or urinary tract infection. As per Williams 25 edition typically, but not always, hypertension induced by pregnancy will have dissipated during puerperium. So, it correlates with the present study & this finding was mostly pronounced in the labetalol group in comparison to methyldopa groups.

5. Conclusion

The study showed that labetalol is more advantageous than methyldopa in terms of better and quicker control of blood pressure. Labetalol delays in the appearance of premonitory signs and symptoms of pre- eclampsia, thus allowing prolongation of pregnancy. The chances of spontaneous onset of labour were greater in the labetalol group when compared to methyldopa group and those who had to have in- duction of labour were noted to have a better progress of labour and followed by increased vaginal birth. In the labetalol group Emergency LSCS was less than the methyldopa group, so operative interference was much less in labetalol treated cases. The maternal and foetal morbidity was much lower in labetalol treated cases and this was only possible due to decreased rate of caesarean section in the cases that were on labetalol therapy.

Post treatment foetal outcome was much better in labetalol treated cases, so the labetalol is much more superior so far as foetal safety concern. In this comparative study, labetalol showed fewer side effects. For all the reason detailed in this study the overall maternal and foetal outcome was better in the labetalol group than methyldopa group.

6. Conflict of Interest

None.

7. Conflict of Interest

None.

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